AMENDMENTS TO THE SPECIFICATION WITH MARKINGS TO SHOW CHANGES MADE

Amend the following paragraphs:

[0004] -- The signal transmitter evaluation unit A in the feedback branch serves to convert the actual position signal xist into the actual speed signal vist. To do this, differentiation which is discrete over time is carried out with the delay element D1, the adder Sum4 and the amplifier G4. The blocks D1, Sum4, G4, vref, Sum1, G1, G2, I1, Sum2 usually operate in this context in a discrete fashion over time, the clock rate corresponding to the delay T of the delay element D1. Correspondingly, the actual position signal xist is not continuous either but rather is sensed in a discrete fashion over time with this clock rate. To this extent, the signal transmitter evaluation A forms the difference between the current and preceding actual positions which is weighted with a factor (the factor here is 1/T ~~here~~).--.

[0005] -- The aim is usually to obtain the highest possible dynamics, i.e. (1) the speed v ~~should follow possible~~ responds to changes in the reference speed vref as quickly as possible, and (2) ~~possible~~ sudden interference forces which in FIG. 1 would correspond to an additional additive component in the acceleration a which is not indicated there are as far as possible only to have a brief effect on the speed v. In order to obtain the highest possible dynamics, the aim is to implement the highest possible values for Kp in the amplifier G1 and 1/Tn in the amplifier G2 of the controller R. However, in practice there are limits on this, inter alia because the interference variable rx falsifies the actual value vist of the rotational speed. That is to say even if the true speed v corresponds to the reference value vref, the actual value vist which is determined generally differs from vref, which, when Kp is too high, gives rise to excessive motor currents i and, consequently, leads both to additional heating and generation of noise and also to excessive ~~accelerations~~ acceleration values a and also to ~~deviations of~~ the speed value v deviating from the reference value vref. In this way, even when vref is constant, an undesired additional noise-like ~~alternating~~

~~portion~~ variation occurs both in the current i and in the speed v. In the case of the current i, this ~~alternating portion~~ variation is referred to as current ripple, and in the case of the speed v it is referred to as speed ripple.--.

[0015] -- One of the split-off signal portions is preferably a higher value signal portion and the other a lower value signal portion with respect to the signal ~~amplitude~~ range. This has the advantage that specifically the lower value signal portions, which are primarily changed by noise and interference variables, can be handled in a particular way. It is thus favorable if the signal processing device in the signal path for the lower value signal portion has a low pass filter. This allows high-frequency interference portions to be removed from the total signal.--.

[0016] --Furthermore, the signal processing device can have one or more band stops in the signal path for the lower value signal portion. As a result, frequency ~~portions~~ bands which are caused by interference can be filtered out of the signal in a selective fashion.--.

[0025] -- The speed control system according to the invention which is shown in FIG. 3 is composed essentially of the components which have already been presented in conjunction with FIG. 1. However, a nonlinear controller NR is connected upstream of the controller R described in ~~said figure~~ FIG. 1. In said controller NR the speed difference ev is divided into two portions, as is also possible in a similar way in the case of a binary number with the splitting into higher order bits and lower order bits. In the ~~present case~~ example shown in FIG. 3, however,, the ~~splitting~~ the speed difference ev is split into a higher value portion evhi and a lower value portion evlo where evhi + evlo = ev.--.

[0026] -- ~~It is clear here that~~ In the example shown in FIG. 3, the lower value portion evlo corresponds approximately to ~~that~~ the signal level which is caused by the interference variable rx. ~~With the~~ The higher value portion ~~the procedure adopted~~ is

processed as in the prior art according to FIG. 1, while the lower value portion is, for example, a) ~~previously~~ prefiltered or b) fed only to the I element. This is possible since the interference variable rx is free of mean values. For ~~the case~~ example a) a block circuit diagram is specified in FIG. 3.--.

[0027] -- The signal output of the adder Sum1 is split into two signal paths. A limiter B is arranged in one of the signal paths. Said limiter limits the signal ~~amplitude~~ range corresponding to a desired saturation function, for example

$$evlo = \begin{cases} -Q \ for \ ev < -Q \\ ev \ for \ -Q \le ev \le Q \\ Q \ for \ Q < ev \end{cases}$$

with a positive constant Q. The resulting signal evlo comprises only the lower value portions of the original signal ev. In an adder Sum5, the signal portion evlo is subtracted from the original signal ev, resulting in the higher value signal portion evhi. The higher value signal portion, which originates, for example, from a load change of the motor and thus corresponds to an actual change in the speed v, is fed in an unprocessed form to an adder Sum6. The lower value signal portions evlo are, on the other hand, filtered in a filter F before they are fed to the adder Sum6. The two signal portions are added again to form a common signal in the adder Sum6, and are fed to the controller R or its amplifier G1.

[0028] -- The limiter B ensures that the ~~amplitude~~ range of the lower value portion evlo corresponds approximately to the range of the signal portion ~~which is brought about in~~ of the actual speed signal vist that is contributed by the interference signal rx. For example the low pass filter TP from FIG. 2 can be used for the filter. In this case, the smoothing of the actual value of the speed or rotational speed is effective only for the signal portion for which it is actually also required. Alternatively

or additionally, one or more band stops with an adjustable stop frequency can be implemented in the filter F[[,]]. For example, their stop frequency or frequencies ~~being~~ can be adjusted[[, for example,]] in such a way that it corresponds to an integral multiple of the frequency of marks on the signal transmitter whose signal transmitter wheel has a predetermined number of marks to be sampled. In fact the actual value of the speed vist often has considerable interference portions at such frequencies.--.

[0030] -- The nonlinear control step can also be carried out between the signal transmitter evaluation unit A and the adder unit Sum1 for the actual speed signal visit instead of before the control process R. Although this alternative is less advantageous, it is appropriate in existing control circuits in which, for example, only the actual speed signal vist is accessible.--.

[0031] -- The control mechanism according to the invention can also be used for position control. ~~Said~~ This position control can be built up in a customary way without conversion into speed signals. However, alternatively it can also be implemented by utilizing the speed control system from FIG. 3. A corresponding block circuit diagram is represented in FIG. 4, the speed control circuit from FIG. 3 being indicated by the dashed rectangle GR. The actual position signal for the position control is fed to an adder Sum7 which subtracts this signal from a reference position value xref. The subsequent amplifier G5 converts the position difference signal into the speed reference value vref. In this context, a nonlinear controller of the type of the nonlinear controller NR from FIG. 3 can alternatively be connected between the output of the adder Sum7 and the input of the amplifier G5. As a result, the control circuit from FIG. 3 can be used both for controlling speed and for controlling position.--.